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Ilisu Hydropower Project, Turkey

Sub-Committee on Environment Report

Biodiversity, EMP and Related Aspects

Second Site Visit May 15-25, 2008

Report Prepared on Behalf of
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Picture on front cover: Ilisu dam site in May 2008

Contents

List of Tables

List of Figures

LIST OF ACRONYMS AND ABBREVIATIONS

AIDS	acquired immunodeficiency syndrome
CoE	Committee of Experts
d/s	downstream
DSI	Ministry of Water Resources
E	Environmental PIU tasks
EC	Environmental CoE tasks
ECA	Export Credit Agencies
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FAM	Final Assessment Meeting
HEP	Hydro electric project
HIV	human immunodeficiency virus
IC	Ilisu Consortium
m asl	meters above sea level
n/a	not applicable
PIU	Project Implementation Unite
SC-CH	Sub-Committee Cultural Heritage
SC-E	Sub-Committee Environment
SC-R	Sub-Committee Resettlement
SIA	Social Impact Assessment
TOR	Terms of References
u/s	upstream
WWTP	Waste Water Treatment Plant

EXECUTIVE SUMMARY

1. Purpose of the Site Visit

The site visit reported on here served the purpose of checking work progress and situation of all issues related to E-TOR dealing with biodiversity, public health, environmental management and related issues. The other E-TOR, dealing with water quality, waste water treatment and related aspects, will be dealt with in a separate report once the experts for these aspects, under the responsibility of Prof. A. Saatçi, will have been to the field (site visit scheduled for first week of June 2008).

Work carried out focussed on those TOR which, according to the results of the first site visit carried out in December 2007, required immediate action (see Table 1).

2. General CoE Topics

A number of topics of a more general interest were discussed during the meeting held. This concerns mainly the importance of Ilisu project in the international context, staffing and capacity of PIU, and communication between PIU and ECAs/CoE.

3. Biodiversity

Studies on biodiversity have to be carried out (Terrestrial Fauna and Flora according to E-13, Fish Fauna according to E-16. From the discussions held and the reports obtained, the following conclusions were reached:

- The field work on these studies started as planned.
- The persons carrying out these studies are qualified for this work and very knowledgeable in their respective fields.
- To some extent (e.g. plankton and benthos in Dicle River) the studies under way now go to some extent beyond what was asked for in the FAM-TOR.
- The studies that are being done provide the information required under these two TORs.

4. Waterborne Diseases

Concerning assessment of waterborne diseases, a report was submitted and presented which covers TOR E-19 and the first part of E-20.

In a next step, specific measures to be taken for Ilisu Dam construction need to be identified and described, as specified in the second part of E-20.

In relation with health issues it was also pointed out by the Expert that while conducting a malaria and HIV/AIDS prevention program is an objective of the construction period, it is nevertheless required to develop this program now in order to have it in place in time.

For this reason, it was made clear that TOR E-21, preparation of the malaria and HIV/AIDS prevention program, is the next priority.

5. EMP Sub-Plans

According to TOR E-24, the required sub-plans need to be prepared to be ready 3 months before construction work starts. During this site visit, 11 plans were handed over to the Expert for commenting. The three others figuring on the overall list are the Resettlement Implementation Plan (still to be prepared and to be dealt with by the Subcommittee on Resettlement), the Landscape Management Plan (of which the general rules to be applied on all detailed implementation plans need to be prepared at this stage), and the Wildlife Management Plan (which will have to be done on the basis of the fauna and flora study).

The 11 Sub-Plans submitted were the following:

1. Solid waste management plan
2. Hazardous waste management plan
3. Emission and dust control plan
4. Fire management plan
5. Noise control plan
6. Health and safety plan
7. Erosion and sedimentation control plan
8. Water and waste water management plan
9. Environmental training and traffic management plan
10. Explosive ordnance survey and disposal plan
11. Quarry management plan

The following main comments were made to the Sub-Plans submitted: (i) most of the required information is there; (ii) however, the form win which they are now does not make them suitable instruments for application on the construction site (too much background information not really belonging here, no uniform, clear structure, no clear identification of responsibilities, measures to be taken not defined with enough clarity).

A form was handed over to PIU and discussed in detail which should be used as a basic structure for all the Sub-Plans. It was agreed that the relevant information contained in the existing sub-plans, corrected and clarified where required, will be presented in this format, which should ensure their applicability on the construction site.

One of the issues discussed was the exact meaning of the term "**in place not less than 3 months before actual work starts**". In the view of PIU, the consortium and the ECS, work has not yet started.

However, some activities have been going on since last December: preparation of a part of the future camp site, construction of some camp buildings (restaurant and a few others), internal camp roads (so far only as dirt roads, no concrete or asphalt surface), and drinking water supply intakes. It is also planned to start soon with the required upgrading measures of the access road.

However, even if "main work" starts only in 2009, it has to be considered that the work under way now (mobilisation and road works according to the Detailed Construction Plans) has to be done taking into account environmental issues.

It is therefore important to have a set of environmental rules to be applied on the work already in progress now (see also observations in Chapter 5 to this point). It was pointed out that in the view of ECAs and CoE, and very certainly in the view of the public, this is part of the overall dam construction activities, even it is termed as only preparatory work (and even if, as was the case at least till now, there is no impact on the river).

6. Situation on Site

A number of observations were made on site in relation to the work already under way.

Positive points are the facts that there is one persons responsible for environmental protection is on site already, that some landscaping measures have started (use of removed topsoil, planting of trees) and that there is a report describing the environmental protection activities undertaken so far in a concise and clear way.

On the other hand, there were some observations which clearly show the importance of having (and enforcing) clear environmental protection rules (like careless removal of trees, littering, causing unnecessary impacts by excessive concreting, damaging areas not really required for construction purposes). While these, for the time being, are effects of small overall extent and importance, of a type that can be seen on any construction site which is not thoroughly supervised, it is nevertheless of high relevance, especially in the case of a site like Ilisu, that strict rules are being applied from the very start.

It was therefore pointed out that the position of the environmental manager on site is important, that additional experienced staff will be required during the main construction period, that the environmental manager has to report directly to the site manager, and that it must be clear to the entire work force that instructions of the environmental manager have to be followed.

7. E-TOR

The following Table lists those E-TOR which were discussed or otherwise dealt with during this site visit. Important developments are highlighted. See Annex A2 for a complete list of E-TOR.

Table 1: List of E-TORs discussed during site visit

Here, only those TOR are listed which were directly addressed during the May sit visit. **Conclusions etc. given in red font.** See Annex 2 for a complete list of E-TORs

No.	Task PIU		Task CoE	CoE	Comments
E-4A	PIU will provide confirmation that final design of the HEPP will include variable water intake.			Saatci	E-4A: Completion before final commitment **A point was made by DSI that variable water intake "is technically not feasible and has never been made for a hydropower project". CoE pointed out that a formal written request to the ECAs is required if this condition should not be complied with.**
E-4B	PIU will evaluate and implement appropriate mitigation measures, in case the rough estimate or the modelling of future water quality and stratification of the reservoir (ref. 3A and 3B) shows that water quality is not acceptable even with the 3 WWTP planned.				E-4B: Commencement asap; Evaluation of measures within 2 months of rough estimate or modelling has shown that water quality will not be sufficient. Completion: Implementation of Measures: within 2 years from evidence (estimate or model)
E-13	PIU will submit an inventory of threatened and key species indicating: (i) exact distribution (in and around reservoir area), (ii) what the abundance is (i.e. importance for local or global population), (iii) what the habitat conditions at these precise sites are, (iv) what portion and parts of the habitat will be lost due to Ilisu dam and (v) if these species also live in nearby areas in a sufficient number as to guarantee the survival of the local population to ECAs and CoE.	EC-11	CoE will review PIU's inventory of threatened and key species and comment on the results (including information on distribution in and around reservoir area, importance for local or global population, habitat conditions, portion of the habitat lost due to Ilisu dam and survival of local population).	Zwahlen	E-13: **Inventory based on field survey: Start of Inventory March, 2008** Completion: Comparative analysis of available, contradictory information: before final commitment **Field work has started as requested. First results have been presented during site visit. The study is on track.** EC-11: Review and comment to ECAs 1 month after completion of study.

No.	Task PIU		Task CoE	CoE	Comments
E-16	PIU will provide an intensive study as referenced in E-15 (e.g. under responsibility of the Dicle University) on the existing conditions of the Tigris fish species (including Cobitis Kellei) and the soft shelled turtle, a prediction of potential negative impacts and a documentation of the development of the aquatic ecosystem and the fish population after commissioning. The study will include mitigation and compensation measures in case of predicted severe decline. This study will deal with pre-construction, construction and operational phase	EC-15	CoE will review and comment on PIU's study (REF: E-16) on Tigris fish species and soft shell turtle dealing with current situation (baseline), prediction of impacts, developments in aquatic ecosystem and fish/turtle population and necessary mitigation measures.	Zwahlen	**E-16: Commencement in March 2008. Report due in May 2009.** **Field work has started as requested. First results have been presented during site visit. The study is on track.** Rest: 5 years after impoundment (with yearly reports) EC-15: Commencement after completion of study. Completion: Review of/ comments on parts of the study dealing with current situation, first prediction of impacts and necessary mitigation measures: 3 months after completion of study. Rest: 5 years after impoundment, yearly 2 months after reports by DSI
E-19	PIU will define measures and actions necessary for the assessment of water borne diseases.	EC-18	CoE will assist PIU in defining the measures and actions necessary for assessing the relation of malaria and other waterborne diseases in the project area.	Zwahlen	**E-19 / EC-18: Completion before start of main dam construction work. Start March 2008** **Report submitted and results presented. Considered as done.**
E-20	PIU will assess the occurrence of malaria and other water borne diseases in the project area in relation to the HEPP and provide information to the regional Health Authorities on the relevant findings. PIU will develop a catalogue of measures (prevention, education, health service etc.) to prevent an increase of water borne diseases in the project area before reservoir impounding starts.	EC-19	CoE will assist PIU developing measures (prevention, education, health service etc.) to prevent an increase of water borne diseases and HIV/AIDS in the project area.	Zwahlen	**E-20: Commencement: Assessment: start of main dam construction. Catalogue of measures asap** Completion: Assessment : after 3 year of operation Catalogue of measures: 6 month before impoundment **First part done for present situation. Measures need to be specified.** **EC-19: before start of main dam construction**

No.	Task PIU		Task CoE	CoE	Comments
E-21	Conducting a Prevention Programme for Malaria and HIV/AIDS.	EC-20	CoE will regularly check on the work progress of the Prevention Programme for Malaria and HIV/AIDS.	Zwahlen	E-21: **Commencement: start of main dam construction.** **The Program as such needs to be prepared in order to be in place in time. This is a priority action to be taken.** Completion: Through out life time of HEPP EC20: Commencement: Start of Prevention Programme Completion: End of repayment period
E-23	PIU will conduct a topographical study to determine the ground elevation of houses in Tepe and – after consulting the affected people in Tepe - will identify necessary actions and protection measures to be implemented.	EC-22	CoE will review and comment on the topographical study on Tepe and will assist in identification of actions and protection measures to be implemented.	Zwahlen	E-23: **Completion. 2 years before start of impoundment** **If topographical survey reveals impacts on village, this will have to be included in the resettlement planning.** EC-22: Review and comments: 1 month after completion of study Identification/implementation of measures: at latest 2 years before impoundment starts.
E-24	The PIU will submit an acceptable EMP/EAP covering the construction and the operational phase. This EMP/EAP will clearly identify the impacts of the project, necessary actions and mitigation measures to be taken, time schedule for measures and the entities responsible for their implementation as well as the required budgets. For measures that are outside the scope or the competence of the PIU, PIU will provide commitments of the responsible institutions. (a) Framework EMP for construction and operational phase defining parts of overall project (works, activities etc.) for which Sub-EMPs will be provided, date of providing Sub-EMP, date of respective works/activities to start etc. (b) Detailed Sub-EMPs (details as described under task)	EC-23	CoE will assist PIU in preparing an acceptable EMP/EAP (Sub-EMP) covering the construction and the operational phase. This includes identifying the impacts of the project, necessary actions and mitigation measures to be taken, time schedule for measures and the entities responsible for their implementation as well as the required budgets. All mitigation measures listed in the UEIAR and in these TORs will be included in the EMP/EAP.	Zwahlen Saatci	E-24A **before final commitment** **E-24B: Start: March 2008. Sub-EMPs for individual stages of work/activities: in place not less than 3 months before actual work starts. "In place" meaning detailed EMP available, reviewed and approved by CoE. No work/activity will commence before the respective Sub-EMP is in place.** **Draft sub-EMPs were presented during this mission. It was agreed that they will be developed further in order to assure to have documents suitable for application on the construction site.** **EC-23: Sub-EMPs review 1 month after Sub-EMP has been provided by PIU**

No.	Task PIU		Task CoE	CoE	Comments
E-26	PIU will implement the Ilisu project in compliance with the EMP/EAP (Sub-EMPs) and the time schedules given in the EMP/EAP. PIU will immediately inform CoE in case of deviation from or incompliance with EAP/EMP or any incompliance with TORs			Zwahlen Saatci	E-26: **Commencement: Immediately.** **The lack of rules for environmental protection in construction work under way was pointed out and discussed. EMP is applicable also on any type of preparatory work.** Completion: End of repayment period

1 INTRODUCTION

1.1 Purpose of This Site Visit

This is the second CoE/SC-E site visit to the Ilisu Project site. As defined in the CoE contracts, usually two such site visits have to be carried out per year.

Due mainly to reasons of availability of the experts, it was decided that (i) this site visit would be carried out independently from the visits of the two other sub-committees (SC-R and SC-CH), and (ii) that the part of the SC-E work focussing on biodiversity, EMP and related aspects would be carried out separately from the work dealing with water quality and related aspects; this latter will be dealt with during the visit scheduled for the first week of June, which will be under the guidance of Prof. Saatci.

The present Report therefore deals with the E-TOR related to biodiversity, human health, environmental management and related aspects.

In the following Chapters, the main issues addressed during this second site visit are described and discussed.

1.2 Schedule of the Site Visits

The site visit lasted from May 15 to 24, 2008, according to the schedule as shown in the following Table.

Table 2-1: Schedule of the SC-E site visit May 2008

Date	Day	Activity
May 15	Thursday	Arrival in Ankara, Accommodation in Ankara at Hotel Ankara Hilton
May 16	Friday	Starting meeting with PIU-E in Ankara. Presentations of PIU and Consultants on work performed. Discussion of pending issues.
May 17	Saturday	Ankara
May 18	Sunday	Ankara; meeting with Mr. Irfen Aker, Dolsar (ECS)
May 19	Monday	Public holiday in Turkey. Entire group travels to Diyarbakir. Meeting with fisheries biologist, site visit, visit of laboratory in Dicle University. Ms. Gabriele Klein, Euler Hermes, joins the Group. Dinner in DSI Guesthouse, Diyarbakir.
May 20	Tuesday	Meeting with Regional Director in Diyarbakir and with Regional Director in Batman. Hasankeyf; visit of DSI Office and Information Centre. The newly founded office of Doga Derngi (Nature Protection NGO) is closed, no visit possible. Travelling on to Midyat, accommodation in Hotel Matyat.
May 21	Wednesday	Visit to dam site. Inspection of dam site and surroundings.
May 23	Thursday	Early morning visit to dam site, inspection of surroundings (crossing river to left bank of Dicle, inspection of drinking water intakes). Meeting with site management, discussion of observations and pending issues. Back to Midian, afternoon travelling to Diyarbakir; meeting with Regional DSI Director in Diyarbakir. Short discussion of main observations. Evening flying back to Ankara
May 23	Friday	Full day: wrap-up meeting with PIU-E, DSI. Morning: presentation of main finding of the mission by R. Zwahlen; discussion of observations. Afternoon: detailed discussion, focus on EMP (scope and structure).
May 24	Saturday	Travelling back to Zurich.

2 ISSUES RELATED TO PIU

2.1 Staffing and Capacity

On the occasion of the December 2007 site visit it was pointed out by the CoE that staffing of PIU, in terms of number and capacity, but also in terms of decision-making power, was not sufficient. It seems that this situation persists, and that additional effort from DSI in this respect is required.

2.2 Communication With ECAs and CoE

It was pointed out during the wrap-up meeting that there is a communication problem between PIU on the one hand and the ECAs and the CoE on the other hand. This is manifest very often in the fact that PIU takes a long time to answer requests from the other parties. At least in part this is connected with the point made above, i.e. with insufficient staffing of PIU:

2.3 Information Centre in Hasankeyf

DSI recently installed an information centre for the Ilisu Project in Hasankeyf. This was visited shortly. Two points on this were made on the occasion of the wrap-up meeting:

- It is not clear how the interested public can find this office. The very least that seems to be required is a tablet with corresponding inscription on the outside of the building (and not only above the office door inside).

- There is no information material whatever that can be handed out to interested visitors. A brochure with project description, and possibly other, more specific information material (e.g. on compensation issues, protection of cultural heritage etc.) should be prepared and available at the centre.

Obviously, the fact that there is an information centre is a positive development, however, its usefulness should be enhanced in the ways described.

3 BIODIVERISTY (TOR E-13 AND E-16)

3.1 Conditions

At the first site visit in December 2007 it was pointed out that the biodiversity studies (TOR E-13: terrestrial flora and fauna, and TOR E-16: fish fauna) are on the critical path of the project, and that these studies have to start in March 2008. A scope of work was prepared for the studies during the December visit and finalised shortly afterwards.

3.2 Work Done and Under Way

During this visit, the following was done in relation to these TOR:

- Two Reports (Flora Fauna, 1st and 2nd Field Survey Report) were handed over to the Expert on Friday, May 16.

- Three topics from these studies (terrestrial fauna; terrestrial vegetation; plankton and benthos) were presented by the involved specialists during the May 16 meeting in Ankara.

- On May 19, the Expert and the PIU-E carried out a field visit with the fisheries specialist from Dicle University, as well as a visit to the biological laboratory, Institute of Biology, Dicle University, was made. On this occasion, the work done and results obtained so far, as well as the ongoing work, were discussed in detail. The importance of field work at the dam site was pointed out, and it was learned that this is planed for early June 2008.

3.3 Conclusions

From the discussions held and the reports obtained, the following conclusions were reached:

- The field work on these studies started as planned.

- The persons carrying out these studies are qualified for this work and very knowledgeable in their respective fields.

- To some extent (e.g. plankton and benthos in Dicle River) the studies under way now go to some extent beyond what was asked for in the FAM-TOR.

- The studies that are being done provide the information required under these two TORs.

4 WATERBORNE DISEASES (TOR E-19, E-20)

4.1 Situation

According to Site Visit 1 Report, this had to be started in March 2008, to be completed before construction starts.

4.2 Work Done and Under Way

A report entitled "Waterborne Diseases" was handed over to the Expert on May 16, and the results were presented at the meeting in Ankara.

The report is a good description of the situation of water borne and water related diseases in the wider project area.

4.3 Conclusions

The report covers TOR E-19 and the first part of E-20.

In a next step, specific measures to be taken for Ilisu Dam construction need to be identified and described, as specified in the second part of E-20.

In relation with health issues it was also pointed out by the Expert that while conducting a malaria and HIV/AIDS prevention program is an objective of the construction period, it is nevertheless required to develop this program now in order to have it in place in time.

For this reason, it was made clear that TOR E-21, preparation of the malaria and HIV/AIDS prevention program, is the next priority.

5 EMP (TOR E-24)

5.1 Objective

The EMP according to E-24A was prepared and accepted before final commitment. The urgency now is to have the construction-related sub-plans, as defined in the EMP, ready, as per E-24B.

In this respect, the Site Visit 1 Report stated (p. 42):

E-24B: Start : March 2008. Sub-EMPs for individual stages of work/activities: in place not less than 3 months before actual work starts. "In place" meaning detailed EMP available, reviewed and approved by CoE. No work/activity will commence before the respective Sub-EMP is in place.

5.2 Present Situation

During this site visit, the following EMP Sub-Plans were handed over to the Expert (first as hard copy, then also electronically):

1. Solid waste management plan
2. Hazardous waste management plan
3. Emission and dust control plan
4. Fire management plan
5. Noise control plan
6. Health and safety plan
7. Erosion and sedimentation control plan
8. Water and waste water management plan
9. Environmental training and traffic management plan
10. Explosive ordnance survey and disposal plan
11. Quarry management plan

The three other plans figuring on the overall list are the following:

1. Landscaping measures: detailed landscaping plans will have to be prepared throughout the project implementation phase, at every stage where detailed implementation plans will be ready. However, right now it is important that a set of general landscaping and landscape protection rules are being prepared, which will then have to be implemented in all detailed plans. Obviously, in this respect, there is an overlap with Plan No. 7 in the above list.

2. Resettlement Implementation Plan: this has to be implemented according to the instructions provided by the SC-R.

3. Wildlife Management Plan: this will be prepared at a later stage, based on the findings of the fauna survey (TOR E-13).

One of the issues discussed was the exact meaning of the term "**in place not less than 3 months before actual work starts**". In the view of PIU, the consortium and the ECS, work has not yet started.

However, some activities have been going on since last December: preparation of a part of the future camp site, construction of some camp buildings (restaurant and a few others), internal camp roads (so far only as dirt roads, no concrete or asphalt surface), and drinking water supply intakes. It is also planned to start soon with the required upgrading measures of the access road.

Already in the comments to the material submitted by PIU to the ECAs by April 30, 2008, the Expert pointed out that **"Even if "main work" starts only in 2009, it has to be considered that the work under way now (mobilisation and road works according to the Detailed Construction Plans) has to be done taking into account environmental issues"**. This point was made again during the site visit and in the wrap-up meeting of May 23 in Ankara.

This means that it is important to have a set of environmental rules to be applied on the work already in progress now (see also observations in Chapter 5 to this point). It was pointed out that in the view of ECAs and CoE, and very certainly in the view of the public, this is part of the overall dam construction activities, even it is termed as only preparatory work (and even if, as was the case at least till now, there is no impact on the river).

5.3 General Comments

During the site visit, there was not enough time to read, let alone examine in detail, all the sub-plans. However, a number of them were read, and some general conclusions were drawn and comments made based on this, as follows:

- The sub-plans deal with the subject at hand in a rather comprehensive way, all or most of the required information is there.

- However, in the way they are presented now they are not suitable for application on the construction site. The main problems identified were:

    - too much "dead weight"; so e.g. it is not necessary to provide in the sub-plans a description of the Ilisu project, and a sub-plan is also not the place for providing a theoretical background on the subject.

    - the legal background, while it might be useful for the construction site management to have this information on hand, is not what the work force on site needs to have.

    - there are too many repetitions, and the structure is not clear enough.

- at least in some of the plans, the responsibilities are not clearly defined or even incorrectly allocated.

- For this reason, it was recommended to prepare short, clear and concise sub-plans which are strictly limited to the information required for their implementation on site.

This was the main topic on discussion in the wrap-up meeting of Friday, May 23, in Ankara. The Expert presented a form to be used as a general structure of the sub-plans, and it was agreed that, based on the documents submitted, short, clear and precise sub-plans following this general structure will be prepared and submitted to the CoE.

5.4 Conclusions

In general, the information required from the sub-plans can be found in the documents prepared by ECS and submitted to the Expert. However, the form is not really suitable for application on the construction site.

For this reason, application oriented plans will be prepared and submitted for commenting shortly.

6 SITUATION ON SITE

6.1 Present Situation and Immediate Plans

In spite of the official announcement that "works on site have not started yet" the following preparatory work has been done, is under was or is expected to start soon.

- Construction site camp: under way.
- Drinking water supply: nearing completion.
- Access road: broadening of existing road to start soon, more important road improvements awaiting decision on final project.
- Service bridge: construction to start soon.
- Military installations in the surroundings of the site.

A short report entitled "Environmental Protection Actions before Ilisu Dam and HEPP Construction Commences (as of April 2008)" was handed over to the Expert. This report shortly and clearly describes the relevant measures that have been taken so far or which are under preparation.

6.2 General Problem

From an environmental point of view, the main problem consist in the fact that work - although on a small scale in comparison to the "main work" - has started without any clear rules for environmental protection in place; for the time being, this concerns mainly landscaping and soil protection issues, along with a few other points. These are discussed shortly in the following Sections.

6.3 Specific Observations

6.3.1 Observations Relative to Specific Works

6.3.1.1 Construction Site Camp

A part of the future construction camp site has been prepared, some of the internal roads have been built (so far only as dirt roads, no concrete or asphalt roads as yet), and some buildings, mainly the camp site restaurant, have been built. Care is being applied to remove the topsoil carefully and to use it again for landscaping measures. In the vicinity of the new buildings, on slopes of the areas prepared for construction purposes, a total of about 300 trees have been planted (Photo 7).

This work is going on.

Mainly because of security reasons, for the time being nobody from the work force lives on site. All staff working here live in Dargeçit or in further away places (e.g. Midyat).

6.3.1.2 Drinking Water Supply

For supplying the camp with drinking water, in the gorge downstream of the camp site, at a distance of about 1 to 2 km from the camp, water intakes have been built, capturing three sources with a total discharge of about 70 l/s. These water intakes are nearing completion.

Given the topography of the site and the size of the work, an access road (jeep track) was built only as far as the entrance to the gorge, while the sites as such can only be reached by a footpath. In this way, excessive effects on the gorge have been prevented. Nevertheless, a few observations need to be made.

- Trees: the access road touches a group of old oak trees (the only group of trees of this size in the vicinity of the project site. Site conditions for trees are difficult, and especially mature trees need to be protected. Here, the work was not carried out with the required care (see Photos 8 and 9).

- Unnecessary use of concrete: in the immediate vicinity of the intakes, additional surfaces were covered with concrete, without any obvious reason (see Photo 11).

- Littering: litter, mainly rests of the PVC tubes used as water pipeline, remains on site (see Photo 11 and 12.

- Careless road construction: where the access road was built, additional surfaces were dug up or otherwise disturbed (see Photo 14).

These observations show, that rules must be defined urgently (like e.g. the obligation to collect and dispose of correctly of any litter; clear demarcation of areas to be used for any construction purpose and clearly forbidding to disturb any additional areas not required for the purpose; measures to protect trees).

6.3.1.3 Access Road

Here, three types of work can be identified:

- Broadening the road on the existing alignment. As a general rule, the existing road, starting at the branching off a short distance outside of Midyat, will be broadened from presently about 7 to new 10 m width. According to information received on site, the land for this work has already been bought.

- Taking out sharp bends and too steep slopes: in a few places, the existing road makes too sharp bends, or the slope is too steep, for the types of large lorries which will have to use it during the main construction period. Correcting this will locally require a new alignment. The project for this still awaits final acceptance from the Highway Department, and the land has not yet been acquired.

- Dargeçit bypass: the exiting road passes through the town of Dargeçit. The road there is too narrow, and the heavy traffic would cause too much disturbance, for these reasons it is planned to build a bypass road of about 6 km. Here as well, the project needs to be finalised and the land will have to be acquired.

6.3.1.4 Service Bridge

For getting access to the left bank of Dicle river, it is planned to build a bridge at a distance of about 1 km downstream of the camp site, near the entrance to the gorge.

The alignment as planned now will cut through the group of large oak trees mentioned above (see Photo2 4 and 6). This point was discussed on site, and the necessity was pointed out to carry out the work in a way that a minimum of trees would be affected, and if possible to change the alignment in a way as to bypass this group of trees.

6.3.1.5 Military installations in the surroundings of the site.

At least three military installations are under construction in the surroundings of the construction site, in order to ensure security, one near the entrance to the site (completed or nearing completion, one on a mountain top overlooking the access road, and one on a mountain on the left bank of the river, downstream of the site; the latter two are under construction.

This work is carried out, to put it mildly, in a way showing little concern for the landscape (Photos 15 to 18). However, neither the Consortium, nor PIU (nor the CoE) have any influence on this.

6.3.2 Observations Relative to Specific Issues

6.3.2.1 Waste

Observations have been mentioned above. It was pointed out to the site management that it is important to get this under control right from the start, as it will be more difficult to establish and enforce rules once everybody has become accustomed to "bad habits".

6.3.2.2 Protection Measures on Site

The observations with work at the small scale carried out so far clearly show that it is important to have clear rules in place and to enforce these rules. Some simple rules can be as follows:

- For every work to be carried out the area designated to this purpose must be clearly marked on the ground. This can easily be done with a "fence" consisting of a few stick and a plastic band.

- It must be clear to the workers (and especially to group foremen and drivers of bulldozers and other heavy equipment that no activities are allowed outside these areas, even if it would be "convenient".

- When planning any structures, large trees have to be spared to the extent possible.

- If work is being done in the vicinity of such trees, these must be fenced off and it has to be made clear that any damage to these trees has to be prevented; this

includes the discharge of any material in the root area of the tree (which roughly corresponds to the area covered by the crown of the tree).

Such rules, clearly displayed and strictly applied, can prevent a considerable amount of environmental damage on site.

6.4 Conclusions and Recommendations

6.4.1 Environmental Protection Rules

The observations made above clearly show the importance of having the basic rules for environmental management in place even for rather small-scale work. Establishing these rules has high priority.

6.4.2 Staffing and Organisation

The contractor (in this case the Consortium responsible for the construction) has the obligation to prepare and apply the required rules for environmental protection. In this context, the following observations have to be made:

- Presently, there is one person on site with the responsibility for environmental management. The report prepared by her show that a number of measures have already been taken or are under preparation.

- This is probably adequate staffing for the time being and for the amount of work under way. However, it will certainly not be sufficient for the period of main construction. The consortium will have to plan accordingly for the required human resources.

- The Environmental Manager on site must report directly to the Site Manager. This is not an issue right now, with the small number of staff present on site. However, it will be important at a later stage, with a far greater number of staff, and presumably a group of environmental specialists on site. In this situation, it will be very important that the head of this group, the Environmental Manager, reports and has unrestricted direct access to the Site Manager, and is not a subordinate of, e.g., the head of the technical department of the construction site.

- The Environmental Manager must have the authority to intervene at every time and in every place where environmental rules are not being observed, and it must be made clear to all staff on the construction site that instruction given by the Environmental Manager have to be meticulously followed.

7 WRAP-UP MEETING IN ANKARA, MAY 23

As per "standard procedures" of a CoE site visit, a wrap-up meeting was held in Ankara on Friday, May 23. During this meeting, the points mentioned in the present Report were presented in the form of a power point presentation, and discussed as required. The slides of the presentation are provided in Annex 1.

The main discussion point, which took a considerable part of the morning session and almost the entire afternoon session, was the EMP, as explained in Chapter 4 above. The proposed structure of the individual sub-plans, which will now be applied, is given in Annex 3.

Two specific points were added to the discussion by PIU, which have to be mentioned here:

- **TOR E-4A:** This reads: "PIU will provide confirmation that final design of the HEPP will include variable water intake". DSI stated that this was technically not feasible and had never been done for a hydropower plant before.

  Ms. Klein of Euler Hermes pointed out that this had been agreed upon during the FAM meeting, and that at this time none of the engineers present had made a statement to that effect. In any case, it has to be clear that the CoE is not the entity to decide in a question like this. If for any reason DSI is of the opinion that this FAM-condition can not be met, they would be required to make a corresponding request, in writing, to the ECAs.

- **TOR E-23:** topography at Tepe village. Here the question was whether this point should be here or rather in the Resettlement TORs.

  It was made clear that this point deals only with the topographical situation at Tepe village, which is not clear. Obviously, if the topographical survey would show that the village would be affected (land and/or houses) by the reservoir, then this would be part of the resettlement planning. First, however, we need to know what the situation is and if there is a compensation issue.

ANNEXES

A1 WRAP-UP MEETING PRESENTATION

For the wrap-up meeting, held in DSI's premises in Ankara on Friday, May 23, 2008, the Expert had prepared a power point presentation in order to present the findings and conclusions of this site visit.

The slides used in this presentation are given on the following pages.

Ilisu HEP CoE

Sub-Committee on Environment:

Second Site Visit

Biodiversity, EMP and Related Aspects

Wrap-up Meeting

Ankara, May 23, 2008

Dr. R. Zwahlen

1. General Comments

Overall situation:

- Ilisu project is important: probably the most closely watched hydropower project on earth at that moment.
- A number of organisations is strongly opposed to it and to the involvement of the ECAs of Germany, Austria and Switzerland.
- Every mistake made is immediately registered and publicised, increasing political pressure.
- The contested aspects are resettlement, cultural heritage and environment.

1.1 Communication with PIU

- PIU has an information centre in Hasankyef.

Info Centre in Hasankeyf

Info Centre in Hasankeyf

- Having this centre is good, but:
- Is not visible from outside.
- Has no information material to hand out to interested visitors.

1.2 Attitude of DSI

- Top management is devoted to the project
- But it is equally important that the people doing their work in the field, at all levels, are carefully instructed about and aware of the FAM-TOR.

2. Biodiversity

- E-13: Survey of terrestrial fauna and flora
- E-16: Survey of aquatic fauna
  - started as requested (March 2008)
  - first results (presented on May 16 in Ankara and on May 19 in Diyarbakir) are satisfactory
  - work to continue; importance of dam site
  - nothing to discuss right now

3. Public Health

- E-19: done
- E-20:
  - first part: done
  - second part: to be done (measures)
- E-21: Prevention program for malaria and HIV/AIDS:
  - conducting program: construction phase
  - but: preparation of program to be done now
- This is the next priority; please do it before it becomes the next emergency!

4. E-24: EMP Sub-Plans

1. Solid Waste Management Plan
2. Hazardous Waste Management Plan
3. Emission and Dust Control Plan
4. Fire Management Plan
5. Noise Control Plan
6. Health and Safety Plan
7. Erosion and Sediment Control Plan
8. Landscaping measures
9. Water and Waste Water Management Plan
10. Environmental Training and Traffic Management Plan
11. Explosives Management Plan
12. Quarry Management Plan
13. Resettlement Implementation Plan
14. Wildlife Management Plan

EMP philosophy

- EMP sub-plans are instruments, that define EH&S rules applicable in the project, and very specifically during construction.
- They are made for construction site personnel, namely:
  - site managers
  - work foremen, group leaders
  - all workers

EMP: main requirements

- precise
- practical
- clear
- as short as possible

EMP: main items

EMP sub-plan must contain:

- Measure / item
- Phase (construction, filling, operation)
- Causing project items
- Impact
- Place of impact (on site, outside)
- Characteristics (relevance, duration, reversibility)
- Measure(s)
- Effects
- Responsibilities: who has to do what?
- Detailed plan
- Implementation: when, where, for how long?
- Monitoring: who (internal, external), reporting to whom; actions in case of non-compliance
- Cost estimate

EMP: comments to Sub-Plans

- The required information is there
- but:
  - too long
  - too much ballast
  - not consistently structured
  - too many repetitions

EMP: recommendations

- Leave away all ballast (e.g. consider that all users of a sub-EMP know about Ilisu project and do not require neither a description of the project nor a justification for the EMP).
- Leave away all theory; this can be provided occasionally in environmental trainings (to selected groups).
- Leave away all legal background (keep it for environmental managers, but not for the “average user”
- Make a uniform structure (as far as possible).
- Be specific, short and precise in the proposed measures.

EMP: recommendations

Examples:

- Waste management: provide data sheets for each relevant waste type, indicating mainly what to do with it.
- Erosion and sedimentation control:
  - define measures, e.g. how has topsoil to be stored, what has to be done to restrict any activity to the minimal surface, etc.
  - these measures have then to be integrated e.g. in detailed plans of project items.

5. Observations on Site

- Preparatory activities going on
- Some work (e.g. bypass in access road) in preparation.
- EMP principles must be applied on this work as well.
- Extremely important: all expropriation, even if "only" for a small road correction, must be done according to FAM-TOR!

Measures already taken

Spare living trees!

Littering

Unnecessary impacts

Excessive use of surface

Conclusions

- The rules of the EMP must be there, and they must be clear.
- Awareness raising, environmental training for work force is important
- Rules must not only be made, they must be enforced: responsibility of site management and all group leaders.

Staffing

- One environmental specialist is on site.
- This will not be enough for the main construction period: need for additional staff.
- The environmental manager on site must report directly to the site manager.
- It must be clear to all site personnel that instructions of the environmental manager have to be obeyed.

A2 E-TOR: COMMENTED LIST

The following Table lists all the E-TOR irrespective of the question whether they were a direct objective or discussion point during this site visit or not. Note that this Report basically deals only with those TOR identified with "Zwahlen" in the CoE column.
Text in red font indicates issues dealt with directly during this May 2008 mission.

No.	Task PIU		Task CoE	CoE	Comments
E -1	The PIU will submit detailed information on the 3-staged waste water treatment plants (WWTP) to be built in the project area. This includes: Name of city; capacity of the plant; start and end of construction period; start of operation; effluent characteristics; capital costs of plant; sponsor of plant; operational cost	EC-1A EC-1B	A) CoE will review the information of PIU on the process selection and construction of waste water treatment plants (WWTP). B) CoE will regularly check on the work progress made in constructing the WWTPs and whether the project is in compliance with the time schedule provided by PIU. a) CoE will regularly review the performance data of WWTP obtained from the municipalities through PIU via their members on the CoE. b) When WWTP operators deem their WWTP to be operational and fully functional, CoE will check performance of plants (effluent quality) and will signal to ECAs and PIU if compliance with required effluent values has been achieved.	Saatci	E-1: Completion before final commitment EC-1AA: Completion before final commitment EC-1AB:Completion before impoundment starts EC-1A: Report on completed construction at latest 1 month after completion and at least 11 month before start of impoundment EC-1B Commencement after start of operation of WWTP EC-1BA: Annual review EC-1BB: Confirmation of performance status: within 10 days of receipt of data
E-2	PIU will secure that the 3-staged WWTPs in Diyarbakir, Siirt and Batman are in operation, fully functional and meeting the designed effluent values before reservoir impounding starts. Construction of the WWTP will be completed 1 year before impoundment starts.			Saatci	E-2: Construction completed 1 year before impoundment starts; Completion before reservoir impounding starts

No.	Task PIU		Task CoE	CoE	Comments
E-3A E-3B	The PIU will submit an estimation of water quality (based on simple mass balance) taking into account the 3-staged WWTP in Diyarbakir, Siirt and Batman, growth of population and future developments in irrigation (e.g. increase in irrigated area) in the project area The PIU will submit the results of a modelling of future water quality and stratification of the reservoir taking into account the 3-staged WWTP in Diyarbakir, Siirt and Batman, growth of population and future developments in irrigation (e.g. increase in irrigated area) in the project area.	EC-2	CoE will review the rough estimates and the results of modelling of water quality in the reservoir submitted by PIU at different stages of the development of the model (calibration, verification, and prediction). If modelling of future water quality and stratification of the reservoir shows that water quality is not acceptable even with the 3 WWTP planned, the CoE will assist PIU in developing appropriate mitigation measures. CoE will regularly check on the progress of implementation of measures.	Saatci	E-3A: Completion before final commitment E-3B:Up to 3 Years from final commitment EC-2: Completion before final commitment
E-4A E-4B	PIU will provide confirmation that final design of the HEPP will include variable water intake. PIU will evaluate and implement appropriate mitigation measures, in case the rough estimate or the modelling of future water quality and stratification of the reservoir (ref. 3A and 3B) shows that water quality is not acceptable even with the 3 WWTP planned.			Saatci	E-4A: Completion before final commitment **A point was made by DSI that variable water intake "is technically not feasible and has never been made for a hydropower project. CoE pointed out that a formal written request to the ECAs is required if this condition should not be complied with.** E-4B: Commencement asap; Evaluation of measures within 2 months of rough estimate or modelling has shown that water quality will not be sufficient. Completion: Implementation of Measures: within 2 years from evidence (estimate or model)
E-5	PIU will ensure the implementation of the necessary additional mitigation measures to enhance water quality, in case of negative, trophic situation in the reservoir after commissioning.	EC-3	In case of negative, trophic situation in the reservoir after commissioning, the CoE will assist PIU in developing appropriate mitigation measures. CoE will regularly check on the progress of implementation of measures and whether the project is in compliance with the implementation schedule provided by PIU.	Saatci	E-5: Commencement immediately after evidence Completion: Report on measures to ECAs: within 2 month after information on negative water quality was identified Implementation time schedule: in agreement with ECAs and CoE EC-3:Commencement immediately after evidence and completion at the end of repayment period

No.	Task PIU		Task CoE	CoE	Comments
E-6	The PIU will report periodically on the irrigation in the catchment area of Ilisu reservoir, especially on any plans to extend the current irrigation area of 64.000 ha.	EC-4	CoE will review reports from PIU on irrigation in catchment area of the Ilisu Project and immediately inform ECAs in case of extension of irrigation area.	Saatci	**E-6 / EC-4: First Report by 2. quarter 2008, yearly reports during life span of project**
E-7	The PIU will make sure that Best Management Practice (BMP) for agriculture as described on pages 16-22 in the „Answers to the ECAs matrix concerning UEIAR and EAP“ are applied in irrigation and manuring in the project area in case of an increase in irrigated area. PIU will provide a plan of activities foreseen to implement BMP and a detailed implementation schedule (milestones and deadlines).	EC-5	CoE will assist PIU/GAP in developing Best Management Practice (BMP) for agriculture, in case of increased irrigation in project area. CoE will regularly check on the progress of implementation of measures and whether the project is in compliance with the implementation schedule provided by PIU.	Saatci	E-7 / EC-5: Commencement immediately after evidence. Implementation schedule 2 months after evidence of increase of irrigation area. Completion: Increase becomes known before impoundment: BMP in place before impoundment; Increase becomes known after impoundment: within 2 years after evidence.
E-8	PIU will submit an inventory of the wild dump sites in the reservoir area and its periphery and provide a plan of ecologically meaningful and economically viable measures to prevent that leachate or waste from such dumps enter Tigris, its tributaries or the reservoir and implement such measures. PIU will provide a detailed implementation schedule (milestones and deadlines).	EC-6 EC-7	The CoE will assist PIU in developing measures to prevent that leachate from waste dumps enter Tigris, its tributaries or the reservoir. CoE will regularly check on the work progress made in implementing the mitigation measures under Item 6, the rehabilitation of Siirt dump site and whether the project is in compliance with the time schedule provided by PIU.	Saatci	E-8: Commencement asap. Inventory: commence 2 months after final commitment. Completion: Plan of measures (incl. implementation schedule): 3 years before start of impoundment. Implementation: 2 years before reservoir impounding starts EC-6: Commencement: when inventory is completed. Plan of measures: 3 years before start of impoundment Completion: Implementation of measures: 2 years before reservoir impounding starts. EC-7: Commencement: asap. Completion: 3 months after provision of documents by PIU
E-9	PIU will ensure in cooperation with the Ministry of Environment that Siirt dump site is rehabilitated and replaced by a new one complying with Turkish Standards.			Saatci	E-9: Commencement asap. Implementation plan: 2 years after final commitment. Completion: before reservoir impounding starts

No.	Task PIU		Task CoE	CoE	Comments
E-10	The PIU will ensure that the minimal water flow (measured at a suitable point at close distance to the power plant) of 60 m3/s during impoundment and operation phase is maintained at all times (not only during operation of the turbines). When the responsibility of operating the plant is transferred to EUAS (or any other entity designated to operate the plant) PIU will ensure by suitable contracts, treaties or similar that this obligation is passed on to this entity	EC-8	CoE will regularly check the monitoring results of water flow.	Zwahlen	E-10: **Commencement: start of impoundment** Completion: Through out life time of HEPP EC-8: Commencement: start of impoundment. Completion : End of repayment period
E-11	The PIU will ensure that the time of zero flow during impoundment is kept to a minimum and not more than 3 days. Start of impoundment will not be done in dry season. If start of impoundment is planned during dry season, PIU will install diversion pipe (or other appropriate measures) necessary to keep zero flow to not more than 3 days.	EC-9	The CoE will assist PIU in developing measures that are necessary to keep the time of zero flow during impoundment to a minimum, but not more than 3 days. CoE will check regularly on the work progress and implementation of measures.	Zwahlen	E-11: **Commencement star of impoundment,** in case measures need to be installed, before start of impoundment. Completion as soon as the reservoir reaches spilling level through bottom outlet EC-9: Commencement asap. Completion: End of impoundment
E-12	PIU will provide a comprehensible explanation or an expert's opinion that (a) the minimal flow of 60 m³/s over a longer period and (b) the phase of zero discharge during impoundment do not have severe downstream impacts on ecosystems and riparians.	EC-10	CoE will comment on PIU's explanation or expert's opinion that (a) the minimal flow of 60 m³/s over a longer period and (b) the phase of zero discharge during impoundment do not have severe downstream impacts on ecosystems and riparians.	Zwahlen	E-12 / EC-10: Completion before final commitment
E-13	PIU will submit an inventory of threatened and key species indicating: (i) exact distribution (in and around reservoir area), (ii) what the abundance is (i.e. importance for local or global population), (iii) what the habitat conditions at these precise sites are, (iv) what portion and parts of the habitat will be lost due to Ilisu dam and (v) if these species also live in nearby areas in a sufficient number as to guarantee the survival of the local population to ECAs and CoE.	EC-11	CoE will review PIU's inventory of threatened and key species and comment on the results (including information on distribution in and around reservoir area, importance for local or global population, habitat conditions, portion of the habitat lost due to Ilisu dam and survival of local population).	Zwahlen	E-13: **Inventory based on field survey: Start of Inventory March, 2008** Completion: Comparative analysis of available, contradictory information: before final commitment **Field work has started as requested. First results have been presented during site visit. The study is on track.** EC-11: Review and comment to ECAs 1 month after completion of study.

No.	Task PIU		Task CoE	CoE	Comments
E-14	PIU will develop adequate mitigation measures (such as relocation, creation of new habitats, nesting and spawning areas etc.), based on conclusions of the inventory of threatened and key species. PIU will ensure that these measures are in place before reservoir impounding starts. PIU will provide a detailed implementation schedule (milestones and deadlines).	EC-12 EC-13	CoE will assist PIU in developing adequate mitigation measures (such as relocation, creation of new habitats, nesting and spawning areas etc.) based on conclusions of the inventory of threatened and key species. CoE will regularly check on the work progress of measures under EC – 12 (above) and whether the project is in compliance with the time schedule provided by PIU.	Zwahlen	E-14: **Commencement after inventory.** Mitigation measures and implementation plan to be developed 4 years prior to start of impounding. Completion: Implementation 3 years before reservoir impounding starts. Measures requiring the stable reservoir: implementation after the creation of stable reservoir EC-12: Development of mitigation measures 4 years before impoundment starts. EC-13: Completion of implementation
E-15	The PIU will submit the time of completion, duration, and budget plan for the survey on fish species.	EC-14	CoE will review and comment on time schedule and budget plan for the survey on fish species.	Zwahlen	E-15/ EC-14: Completion before final commitment
E-16	PIU will provide an intensive study as referenced in E-15 (e.g. under responsibility of the Dicle University) on the existing conditions of the Tigris fish species (including Cobitis Kellei) and the soft shelled turtle, a prediction of potential negative impacts and a documentation of the development of the aquatic ecosystem and the fish population after commissioning. The study will include mitigation and compensation measures in case of predicted severe decline. This study will deal with pre-construction, construction and operational phase	EC-15	CoE will review and comment on PIU's study (REF: E-16) on Tigris fish species and soft shell turtle dealing with current situation (baseline), prediction of impacts, developments in aquatic ecosystem and fish/turtle population and necessary mitigation measures.	Zwahlen	**E-16: Commencement in March 2008. Report due in May 2009.** **Field work has started as requested. First results have been presented during site visit. The study is on track.** Rest: 5 years after impoundment (with yearly reports) EC-15: Commencement after completion of study. Completion: Review of/ comments on parts of the study dealing with current situation, first prediction of impacts and necessary mitigation measures: 3 months after completion of study. Rest: 5 years after impoundment, yearly 2 months after reports by DSI

No.	Task PIU		Task CoE	CoE	Comments
E-17	PIU will submit a specific study to identify the most appropriate sites around the reservoir for relocation of plants and animals and for creating new habitats. Modification of already existing valuable habitats will be avoided.	EC-16	The CoE will assist PIU in identifying appropriate sites and measures for relocation of plants and animals and for creating new habitats and with the implementation of such measures. Note requires results from PIU TOR E-13	Zwahlen	E-17: **Commencement after baseline study (E-13)**. Completion: Identification of sites/ study: 3 years before start of impoundment EC-16: Commencement asap. Completion: Identification of sites/ study: 3 years before start of impoundment; Measures: 1 year before start of impoundment
E-18	Acquisition of such sites and implementation of protection measures will be done by PIU. PIU will ensure that sites are available and measures are in place before reservoir impounding starts. PIU will provide a detailed implementation schedule (milestones and deadlines).	EC-17	CoE will regularly check on the work progress made in acquisition of such sites and implementation of protection measures and whether the project is in compliance with the time schedule provided by PIU.	Zwahlen	**18: Commencement after study (E-17)**. Implementation plan: latest 3 years before start of impoundment. Completion: Acquisition: 2 years before start of impoundment Measures: 1 year before start of impoundment. EC-17: Upon completion of implementation of measures, at latest 1 year before start of impoundment.
E-19	PIU will define measures and actions necessary for the assessment of water borne diseases.	EC-18	CoE will assist PIU in defining the measures and actions necessary for assessing the relation of malaria and other waterborne diseases in the project area.	Zwahlen	**E-19 / EC-18: Completion before start of main dam construction work. Start March 2008** **Report submitted and results presented. Considered as done.**
E-20	PIU will assess the occurrence of malaria and other water borne diseases in the project area in relation to the HEPP and provide information to the regional Health Authorities on the relevant findings. PIU will develop a catalogue of measures (prevention, education, health service etc.) to prevent an increase of water borne diseases in the project area before reservoir impounding starts.	EC-19	CoE will assist PIU developing measures (prevention, education, health service etc.) to prevent an increase of water borne diseases and HIV/AIDS in the project area.	Zwahlen	**E-20: Commencement: Assessment: start of main dam construction. Catalogue of measures asap** Completion: Assessment : after 3 year of operation Catalogue of measures: 6 month before impoundment **First part done for present situation. Measures need to be specified.** **EC-19: before start of main dam construction**

No.	Task PIU		Task CoE	CoE	Comments
E-21	Conducting a Prevention Programme for Malaria and HIV/AIDS.	EC-20	CoE will regularly check on the work progress of the Prevention Programme for Malaria and HIV/AIDS.	Zwahlen	E-21: **Commencement: start of main dam construction.** **The Program as such needs to be prepared in order to be in place in time. This is a priority action to be taken.** Completion: Through out life time of HEPP EC20: Commencement: Start of Prevention Programme Completion: End of repayment period
E-22	PIU will submit an updated Final Design Studies and a satisfactory Dam Safety Concept including emergency and evacuation plans.	EC-21	CoE will review and comment on the updated Final Design Studies and the Dam Safety Concept including emergency and evacuation plans and report to ECAs.	Zwahlen	E-22/EC-21: **Completion at least 1 year before start of impoundment**
E-23	PIU will conduct a topographical study to determine the ground elevation of houses in Tepe and – after consulting the affected people in Tepe - will identify necessary actions and protection measures to be implemented.	EC-22	CoE will review and comment on the topographical study on Tepe and will assist in identification of actions and protection measures to be implemented.	Zwahlen	E-23: **Completion. 2 years before start of impoundment** **If topographical survey reveals impacts on village, this will have to be included in the resettlement planning.** EC-22: Review and comments: 1 month after completion of study Identification/implementation of measures: at latest 2 years before impoundment starts.
E-24	The PIU will submit an acceptable EMP/EAP covering the construction and the operational phase. This EMP/EAP will clearly identify the impacts of the project, necessary actions and mitigation measures to be taken, time schedule for measures and the entities responsible for their implementation as well as the required budgets. For measures that are outside the scope or the competence of the PIU, PIU will provide commitments of the responsible institutions. (c) Framework EMP for construction and operational phase defining parts of overall project (works, activities etc.) for which Sub-EMPs will be provided, date of providing Sub-EMP, date of respective works/activities to start etc. (d) Detailed Sub-EMPs (details as described under task)	EC-23	CoE will assist PIU in preparing an acceptable EMP/EAP (Sub-EMP) covering the construction and the operational phase. This includes identifying the impacts of the project, necessary actions and mitigation measures to be taken, time schedule for measures and the entities responsible for their implementation as well as the required budgets. All mitigation measures listed in the UEIAR and in these TORs will be included in the EMP/EAP.	Zwahlen Saatci	E-24A **before final commitment** **E-24B: Start : March 2008. Sub-EMPs for individual stages of work/activities: in place not less than 3 months before actual work starts. "In place" meaning detailed EMP available, reviewed and approved by CoE. No work/activity will commence before the respective Sub-EMP is in place.** **Draft sub-EMPs were presented during this mission. It was agreed that they will be developed further in order to assure to have documents suitable for application on the construction site.** **EC-23: Sub-EMPs review 1 month after Sub-EMP has been provided by PIU**

No.	Task PIU		Task CoE	CoE	Comments
E-25	PIU will submit updates of EMP when necessary (to be decided by CoE) or when there are substantial changes in the EMP.	EC-24	CoE will decide on the necessity of EMP updates (except where completion of pending studies require updates in any case) and review any updates of the EMP and/or substantial changes in the EMP.	Zwahlen Saatci	E- 25/EC-24: **When necessary during project implementation** B: Completion : End of repayment period of project
E-26	PIU will implement the Ilisu project in compliance with the EMP/EAP (Sub-EMPs) and the time schedules given in the EMP/EAP. PIU will immediately inform CoE in case of deviation from or incompliance with EAP/EMP or any incompliance with TORs			Zwahlen Saatci	E-26: **Commencement: Immediately.** **The lack of rules for environmental protection in construction work under way was pointed out and discussed. EMP is applicable also on any type of preparatory work.** Completion: End of repayment period
E-27	PIU will update the budget plans for the project to include all tasks described in the TORs of PIU and CoE.				E-27: Completion before final commitment
E-28	The PIU will conduct a monitoring program of water quality in Tigris and its tributaries and in the reservoir. Parameters to measure, points of measuring, frequency to be determined in cooperation with CoE.	EC-25	CoE will check the monitoring reports of PIU on: ▪ water quality in Tigris and its tributaries and in the reservoir ▪ water flow ▪ time of zero discharge during impoundment ▪ fauna/eg. bird species after commissioning ▪ aquatic ecosystem and the fish population after commissioning ▪ development of relocated flora and fauna species in their new habitats ▪ malaria and other water borne diseases in the project area	Saatci Zwahlen	**E-28: Program definition 1st CoE site visit** Completion: Ongoing during guarantee period EC-25: Commencement : With submission of monitoring reports Completion: End of repayment period.

No.	Task PIU		Task CoE	CoE	Comments
E-29	The PIU will measure the water flow (output at dam site or in short distance) daily.			Zwahlen	E-29: **Commencement: Start of impoundment** Completion: Ongoing during guarantee period
E-30	During impoundment PIU will record the time of zero discharge			Zwahlen	E-30: **Commencement: Start of impoundment** Completion: End of impoundment
E-31	PIU will monitor fauna (e.g. bird species) after commissioning			Zwahlen	E-31: **Commencement: after commissioning** Completion: Ongoing during guarantee period
E-32	PIU will monitor the aquatic ecosystem and the fish population after commissioning. Parameters to measure, key species, point of measuring, frequency to be determined in cooperation with CoE.			Zwahlen	E-32: **Monitoring: After start of operation of the dam** Completion: Establishing Parameters: 1 year before impoundment Monitoring: end of repayment period
E-33	PIU will monitor the development of relocated flora and fauna species in their new habitats. Monitoring period, parameters, frequency to be determined in cooperation with CoE.			Zwahlen	E-33: **Commencement: Relocation, parameters: 6 months before relocation** Completion: Ongoing during guarantee period
E-34	The PIU will conduct a monitoring program of malaria and other water borne diseases in the project area (ref also E- 20). Methods, parameters/indicators and frequency to be determined in cooperation with CoE.			Zwahlen	E-34: **Commencement: With impoundment** Completion: Ongoing during guarantee period

No.	Task PIU		Task CoE	CoE	Comments
E-35	PIU will regularly inform the CoE on the implementation of the EAP/EMP, especially on the work progress/implementation of: ▪ construction of WWTP ▪ measures to implement BMP in irrigation and manuring ▪ additional mitigation measures to enhance water quality, in case of negative, trophic situation in the reservoir after commissioning ▪ Rehabilitation of dump sites in project area, mitigation measures to reduce risk from dump sites, rehabilitation of Siirt dump site and implementation of new dump site according to Turkish standards. ▪ measures to prevent increase of water borne diseases and the Prevention Program for HIV/AIDS PIU will immediately inform CoE on any deviation from plans or incompliance.	EC-26	CoE will regularly check on the implement/work progress of the Ilisu project and whether the project is in compliance with the EMP/EAP (Sub-EMPs) and the time schedules given in the EMP/EAP.	Zwahlen Saatci	E-35: **Commencement: Implementation of EAP / AMP** Completion: Ongoing during guarantee period EC-26: Commencement : Immediately after EMP/EAP (Sub-EMP) have been provided by PIU Completion: End of repayment period

No.	Task PIU		Task CoE	CoE	Comments
E-36	PIU will regularly inform the CoE on the monitoring results of: ▪ water quality in Tigris, its tributaries and in the reservoir ▪ water flow ▪ Monitoring of fauna/eg. bird species after commissioning ▪ aquatic ecosystem and the fish population after commissioning ▪ development of relocated flora and fauna species in their new habitats ▪ malaria and other water borne diseases in the project area. PIU will immediately inform CoE on any deviation from plans or incompliance.	EC-27	CoE will provide reports to the ECAs on work progress and implementation of mitigation measures, monitoring results (e.g. Water quality, water flow etc.), compliance with time schedules and EMP/EAP and any deviation or incompliance. Information on the different issues will be comprised in one quarterly report during construction and resettlement phase and an annual report during operation.	Zwahlen Saatci	E-36: **Commencement with monitoring** Completion: Ongoing during guarantee period EC-27: Commencement asap Completion: End of repayment period

A3 EMP FORM FOR SUBPLANS

Commented sample EMP form proposed to be used.

Measure	**Title of Measure**	**No.**	**xx**
Impact	Main expected impact		
Phase	Construction Phase, Filling Phase, Operation Phase		
Project component	Causing agent of impact (e.g. traffic, construction machines, …)		
Affected part of environment	Air quality, water quality, human health,…		
Place	On site (construction site), off site (roads and surroundings due to traffic), other,		
Description of impact	Short description of impact if no measures are taken.		
Characteristics	Importance and duration of impact: high, medium, low; transient, long lasting, irreversible…		
Measures	Short description of measures to be taken (short but detailed enough for clarity).		
Effects	Expected effect of recommended measures. Statement on whether considered as being sufficient for reaching the required goals.		
Responsibilities	Who is responsible for • detailed planning • implementing measures • reporting (to whom? how often?) • monitoring • taking remedial action if required. Note: for many measures to be taken during the construction phase, direct responsibility for implementation (and possibly even detailed planning) will be the Contractor's. In such a case it is important that the tender documents, and (mainly) the contract, contain the respective clauses in an unambiguous way.		
Detailed plan	Detailed plan on how to implement the required measures. This can include staffing (e.g. obligation for contractor to have a responsible person for environmental aspects), construction of required infrastructure (e.g. waste water treatment plant for construction camp), procedures (e.g. guidelines for storage and handling of hazardous substances) and equipment (e.g. hearing protection device and other personal safety equipment).		
Implementation	When has what activity to start, how long will it last, etc.		
Monitoring	What needs to be monitored, how often, for what period, and by whom? Who receives monitoring results, and with what frequency? Is monitoring entirely internal (i.e. by own staff) or is external monitoring required? If the latter: by whom, how often? Who must be informed in case of irregularities (including accidents etc.)? Who is responsible for taking remedial actions, if measures prove to be insufficient?		
Cost estimate	If possible. Who is responsible for covering costs?		
Observations	if any		

A4 PHOTOS

All the pictures on the following pages show the situation as of early December 2007.

Photo 1: Fish study
Checking a fish catch by the fisheries specialist of Dicle University, near Bismil.
May 2008

Photo 2: Dam site
No work going on as yet near the dam site.
May 2008

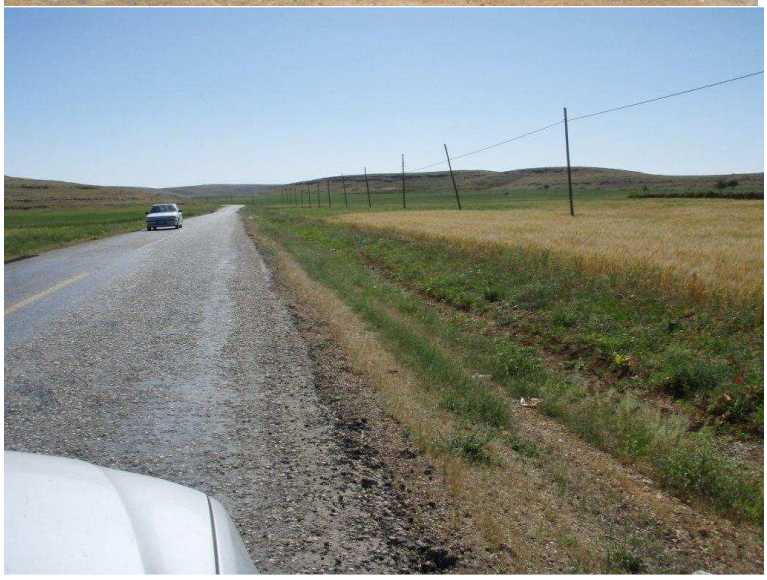

Photo 3: Access road
The road will be widened form presently about 7 to new 10 m (i.e. approximately by the not cultivated strip along the road).
May 2008

Photo 4: Service bridge

Picture taken along the intended alignment of the bridge. It is inevitable that some of the trees will have to be felled.
May 2008

Photo 5: Oaks

The oak (*Quercus* sp.) is widespread and abundant in the wider project area. However, most specimens, as shown here, are small bushes rather than trees, due to cutting of old trees and extensive browsing by goats.
May 2008

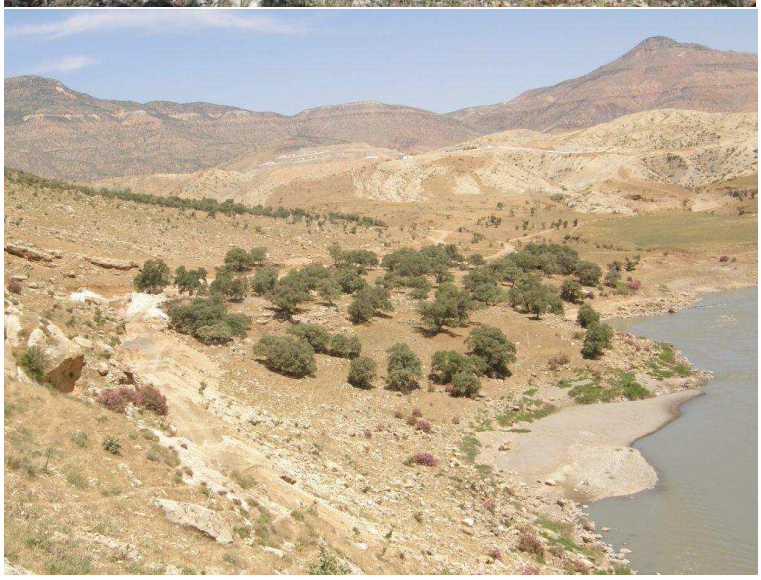

Photo 6: Stand of old oaks

There is only one group of old oaks in the vicinity of the project site, just upstream of the Dicle gorge. At the left fringe, the road for access to the drinking water intake was built (see Photos 8 and 9). The alignment for the service bridge goes to through the middle of this group of trees. If possible, this should be changed so as to have it either upstream (far end) or downstream (near end) of the grove.
May 2008

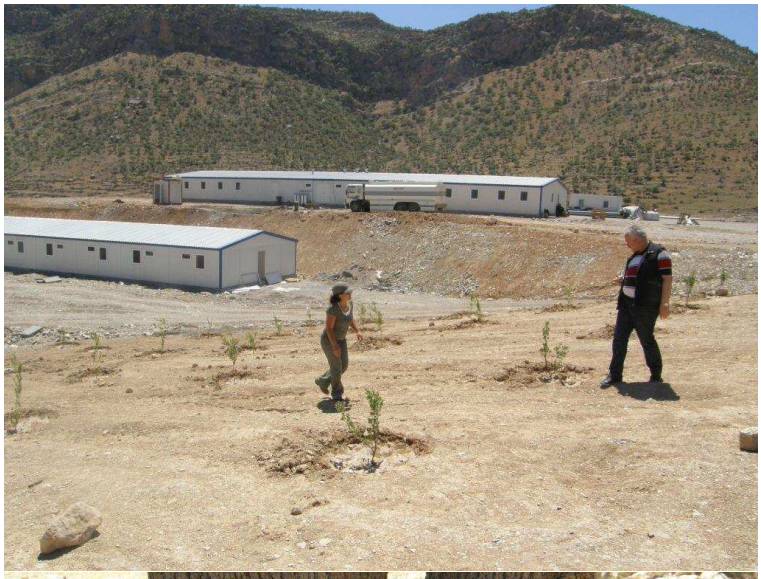

Photo 7: Camp site

Some new buildings and a part of the recently made tree plantation (foreground).
May 2008

Photo 8: Damage to trees

If they are not fenced off, trees are often damaged by construction work.
May 2008

Photo 9: Road for water intakes

Some trees were felled, an impact that could easily have been avoided.
May 2008

Photo 10: Drinking water intake
The site is accessible only by a footpath, the structure is rather small and inconspicuous.
May 2008

Photo 11: Unnecessary concreting
Surfaces covered with concrete without any specific purpose. This as well is an unnecessary impact.
May 2008

Photo 12: Rests of pipes left on site
Strict rules for waste removal and disposal must be set up and enforced.
May 2008

Photo 13: Littering near water intake
See comments to Photo 12.
May 2008

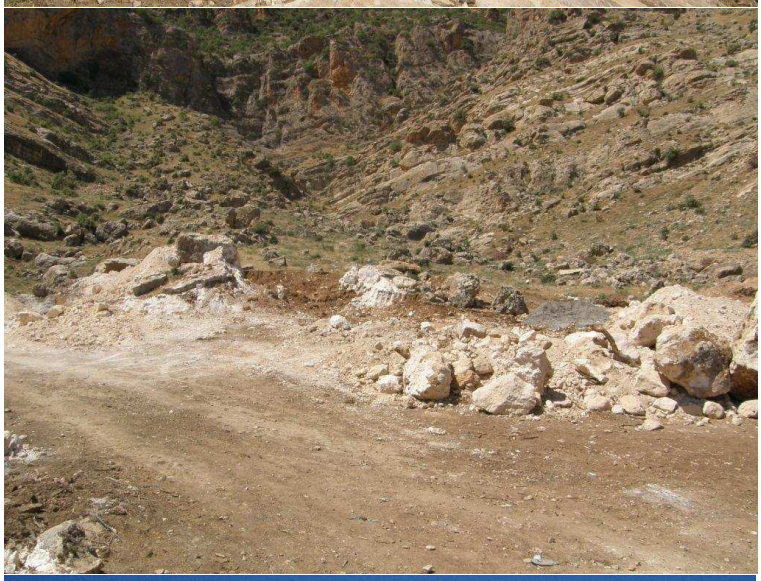

Photo 14: Road to water intake
The disturbed surface is much larger than what would have been required. This can be prevented by clearly marking the area to be used before work starts.
May 2008

Photo 15: Camp security
Military camp at entrance to construction site, carried out with massive earth movement.
May 2008

Photo 16: Landscape near dam site
Approaching dam site from Dargeçit village.
Picture taken December 2007

Photo 17: Landscape near dam site
Same as above; on the mountain top in the centre of the picture a military post is under construction.
May 2008

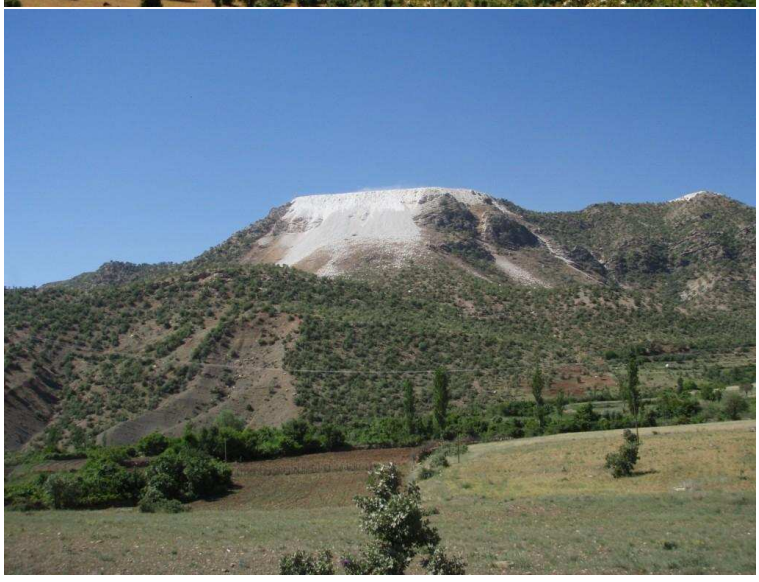

Photo 18: Security site preparation
Massive impact on landscape.
May 2008